WHAT IS CLAIMED IS:

1. A system including:

an accelerometer, configured to detect an acceleration signal in a subject;

a mitral valve closure (MVC) detector circuit, coupled to the accelerometer to receive the acceleration signal, and configured to detect an MVC indication using information from the acceleration signal;

an aortic ejection (AE) detector circuit, configured to detect an AE indication;

a timer, coupled to the MVC detector circuit and the AE detector circuit, the timer configured to measure a time interval between the MVC indication and the AE indication; and

a classification module, coupled to the timer to receive the measured time interval, and configured to classify the subject based on the measured time interval.

2. The system of claim 1, in which the classification module includes a comparator, the comparator including a first input to receive the measured time interval, a second input to receive a predetermined threshold time interval, and a comparator output to indicate whether the measured time interval exceeds the threshold time interval.

3. The system of claim 2, in which the threshold time interval is between about 50 milliseconds and about 80 milliseconds.

4. The system of claim 3, in which the threshold time interval is about 78 milliseconds.

5. The system of claim 3, in which the threshold time interval is about 60

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milliseconds.

6. The system of claim **2**, in which the classification module is configured to classify the subject as a likely responder to cardiac resynchronization therapy (CRT) if the comparator output indicates that the measured time interval exceeds the threshold time interval.

7. The system of claim **2**, in which the classification module is configured to classify the subject as a likely non-responder to cardiac resynchronization therapy (CRT) if the comparator output indicates that the threshold time interval exceeds the measured time interval.

8. The system of claim **1**, in which the classification module includes an indication, based on the measured time interval, that predicts a degree to which the subject is likely to respond to a particular therapy.

9. The system of claim **8**, in which the classification module includes an indication, based on the measured time interval, that predicts a degree to which the subject is likely to respond to cardiac resynchronization therapy.

10. The system of claim **1**, further including a highpass filter circuit, including an input coupled to receive the acceleration signal from the accelerometer, and an output providing a highpass-filtered acceleration signal.

11. The system of claim **10**, in which the highpass filter circuit includes a differentiator circuit.

12. The system of claim **10**, further including a lowpass filter circuit, including

an input coupled to the output of the highpass filter to receive the highpass-filtered acceleration signal, and including an output providing a bandpass-filtered acceleration signal.

13. The system of claim **10**, further including a peak/level detector configured to detect at least one of a positive or negative peak or level of the highpass-filtered acceleration signal to obtain the MVC indication.

14. The system of claim **13**, further including:

an R-wave detector circuit, configured to detect in the subject an intrinsic heart signal associated with a ventricular contraction;

a P-wave detector circuit, configured to detect in the subject an intrinsic heart signal associated with an atrial contraction occurring after the detected ventricular contraction; and

in which the peak/level detector is configured to obtain the MVC indication by detecting a peak or level of the highpass-filtered acceleration signal that occurs after the R-wave and before the P-wave.

15. The system of claim **1**, in which the AE detector circuit includes an autoregression module configured to compare a portion of the acceleration signal to a model signal, obtained from the subject, to detect the AE indication.

16. The system of claim **1**, in which the AE detector circuit includes at least one of:

a pressure transducer, adapted to detect an end-diastolic aortic blood pressure associated with the AE indication and an onset of aortic flow; and

a plethysmograph adapted to detect the AE indication.

17. The system of claim **1**, further including:

an electrode, configured to receive a cardiac signal;

at least one level detector, coupled to the electrode and configured to detect a beginning and end of a QRS complex; and

a timer, coupled to the at least one level detector and configured to measure a QRS width time duration.

18. A method including:

detecting in a subject an accelerometer-based mitral valve closure (MVC) indication;

detecting an aortic ejection (AE) indication;

measuring a time interval between the MVC indication and the AE indication; and

classifying the subject based on the measured time interval.

19. The method of claim **18**, in which the classifying includes comparing the measured time interval to a predetermined threshold time interval.

20. The method of claim **19**, in which the threshold time interval is between about 50 milliseconds and about 80 milliseconds.

21. The method of claim **20**, in which the threshold time interval is about 78 milliseconds.

22. The method of claim **20**, in which the threshold time interval is about 60 milliseconds.

23. The method of claim **19**, in which the classifying further includes:

classifying the subject into a first class if the measured time interval exceeds the threshold time interval; and

classifying the subject into a second class if the threshold time interval exceeds the measured time interval.

24. The method of claim **23**, in which the classifying the subject into a first class includes classifying the subject as a likely responder to cardiac resynchronization therapy (CRT).

25. The method of claim **23**, in which the classifying the subject into a second class includes classifying the subject as a likely non-responder to cardiac resynchronization therapy (CRT).

26. The method of claim **18**, in which the classifying the subject based on the measured time interval includes providing a therapy responsiveness prediction indicating a higher likelihood of responsiveness for larger values of the measured time interval than the likelihood of responsiveness for smaller values of the measured time interval.

27. The method of claim **26**, in which the providing the therapy responsiveness prediction includes predicting a likelihood that the subject will benefit from cardiac resynchronization therapy.

28. The method of claim **18**, in which detecting the MVC indication includes:

detecting an acceleration signal; and

highpass filtering the acceleration signal to form a highpass-filtered acceleration signal.

29. The method of claim **28**, in which highpass filtering the acceleration signal includes at least one of:

(1) removing a baseline component of the acceleration signal; and

(2) differentiating the acceleration signal.

30. The method of claim **29**, further including lowpass filtering the acceleration signal.

31. The method of claim **30**, further including detecting at least one of a positive or negative peak of the highpass-filtered acceleration signal to obtain the MVC indication.

32. The method of claim **31**, further including detecting a negative peak of the highpass filtered acceleration signal to obtain the MVC indication.

33. The method of claim **31**, including:

detecting in the subject an R-wave associated with a ventricular contraction;

detecting in the subject a P-wave associated with an atrial contraction occurring after the detected ventricular contraction; and

detecting from the highpass-filtered acceleration signal at least one of a positive or negative peak that occurs after the R-wave and before the P-wave to obtain the MVC indication.

34. The method of claim **31**, including:

lowpass filtering the highpass-filtered acceleration signal to obtain a bandpass filtered acceleration signal;

detecting in the subject an R-wave associated with a ventricular contraction;

detecting in the subject a P-wave associated with an atrial contraction

occurring after the detected ventricular contraction; and

detecting, from a signal based on the bandpass filtered acceleration signal, at least one of a positive or negative peak that occurs after the R-wave and before the P-wave to obtain the MVC indication.

35. The method of claim **18**, in which the detecting the AE indication includes comparing a portion of an acceleration-based signal to a model signal obtained from the subject.

36. The method of claim **35**, in which the comparing is performed autoregressively.

37. The method of claim **36**, in which the comparing is confined to a predetermined time window referenced at least in part to an intrinsic heart signal obtained from the subject.

38. The method of claim **18**, in which detecting the AE indication includes at least one of:

detecting an aortic pressure at end-diastole and onset of aortic flow;

detecting an acceleration associated with the aortic pressure end-diastole and an onset of aortic flow; and

detecting at least one of a plethysmographic indication and a tonometric indication associated with the aortic pressure end-diastole and onset of aortic flow.

39. The method of claim **38**, in which the detecting the at least one of the plethysmographic indication and tonometric indication uses at least one of a finger location and a carotid location, respectively.

40. The method of claim 18, further including detecting a QRS complex and measuring a time duration of the QRS complex, and in which the classifying the subject is also based on the measured QRS width.

41. A system including:

an accelerometer, configured to detect an acceleration signal in a subject;

a mitral valve closure (MVC) detector circuit, coupled to the accelerometer to receive the acceleration signal, and configured to detect an MVC indication using information from the acceleration signal;

an aortic ejection (AE) detector circuit, configured to detect an AE indication;

a timer, coupled to the MVC detector circuit and the AE detector circuit, the timer configured to measure a time interval between the MVC indication and the AE indication; and

a wellness indicator module, coupled to the timer to receive the measured time interval, and configured to compute a wellness indication of the subject based on the measured time interval.

42. The system of claim 41, in which the wellness indicator module includes a difference circuit, the difference circuit including a first input to receive the measured time interval, a second input to receive a predetermined threshold time interval, and a difference circuit output providing the wellness indicator indicating a degree to which the measured time interval exceeds the predetermined threshold time interval.

43. The system of claim 42, in which the threshold time interval is between about 30 milliseconds and about 50 milliseconds.

44. The system of claim **43**, in which the threshold time interval is about 40 milliseconds.

45. The system of claim **41**, in which the wellness indicator indicates a greater wellness for a shorter measured time interval than for a longer measured time interval.

46. The system of claim **41**, further including:

a therapy circuit, configured to provide therapy to the subject; and

a therapy adjustment module, configured to adjust the therapy based at least in part on the wellness indicator.

47. The system of claim **46**, in which therapy circuit includes a pacing pulse circuit, coupled to the subject, and in which the therapy adjustment module includes at least one of:

an AV delay adjustment;

an electrode selection; and

an interventricular delay selection.

48. The method of claim **46**, in which the therapy circuit includes a cardiac resynchronization therapy circuit.

49. The method of claim **46**, in which the therapy circuit includes a cardiac rhythm management therapy circuit.

50. The system of claim **41**, further including a highpass filter circuit, including an input coupled to receive the acceleration signal from the accelerometer, and an output providing a highpass-filtered acceleration signal.

51. The system of claim **50**, in which the highpass filter circuit includes a differentiator circuit.

52. The system of claim **50**, further including a lowpass filter circuit, including an input coupled to the output of the highpass filter to receive the highpass-filtered acceleration signal, and including an output providing a bandpass-filtered acceleration signal.

53. The system of claim **50**, further including a peak/level detector configured to detect at least one of a positive or negative peak or level of the highpass-filtered acceleration signal to obtain the MVC indication.

54. The system of claim **53**, further including:

an R-wave detector circuit, configured to detect in the subject an intrinsic heart signal associated with a ventricular contraction;

a P-wave detector circuit, configured to detect in the subject an intrinsic heart signal associated with an atrial contraction occurring after the detected ventricular contraction; and

in which the peak/level detector is configured to obtain the MVC indication by detecting a peak or level of the highpass-filtered acceleration signal that occurs after the R-wave and before the P-wave.

55. The system of claim **41**, in which the AE detector circuit includes an autoregression module configured to compare a portion of the acceleration signal to a model signal, obtained from the subject, to detect the AE indication.

56. The system of claim **41**, in which the AE detector circuit includes at least one of a:

pressure transducer, adapted to detect an end-diastolic aortic blood pressure associated with the AE indication;

a plethysmograph adapted to detect the AE indication; and

a tonometer adapted to detect the AE indication.

57. A method including:

detecting in a subject an accelerometer-based mitral valve closure (MVC) indication;

detecting an aortic ejection (AE) indication;

measuring a time interval between the MVC indication and the AE indication; and

computing a wellness indication of the subject based on the measured time interval.

58. The method of claim **57**, in which the determining includes subtracting a predetermined threshold time interval from the measured time interval.

59. The method of claim **58**, in which the threshold time interval is between about 30 milliseconds and about 50 milliseconds.

60. The method of claim **59**, in which the threshold time interval is about 40 milliseconds.

61. The method of claim **57**, in which the computing the wellness indication includes indicating a higher degree of wellness for a smaller value of the measured time interval than for a larger value of the measured time interval.

62. The method of claim **57**, further including:

providing a therapy to the subject; and

assessing an efficacy of the therapy based on the computed wellness indication.

63. The method of claim **62**, further including adjusting the therapy based at least in part on the assessed efficacy of the therapy.

64. The method of claim **63**, in which adjusting the therapy includes at least one of:

an AV delay adjustment;

an electrode selection; and

an interventricular delay selection.

65. The method of claim **62**, in which providing the therapy to the subject includes providing a cardiac resynchronization therapy.

66. The method of claim **62**, in which providing the therapy to the subject includes providing a cardiac rhythm management therapy.

67. The method of claim **57**, in which detecting the MVC indication includes:

detecting an acceleration signal; and

highpass filtering the acceleration signal to form a highpass-filtered acceleration signal.

68. The method of claim **67**, in which highpass filtering the acceleration signal includes at least one of:

(1) removing a baseline component of the acceleration signal; and

(2) differentiating the acceleration signal.

69. The method of claim **68**, further including lowpass filtering the acceleration signal.

70. The method of claim **68**, further including detecting at least one of a positive or negative peak of the highpass-filtered acceleration signal to obtain the MVC indication.

71. The method of claim **70**, further including detecting at least one of a positive or negative peak of the highpass filtered acceleration signal to obtain the MVC indication.

72. The method of claim **70**, including:

detecting in the subject an R-wave associated with a ventricular contraction;

detecting in the subject a P-wave associated with an atrial contraction occurring after the detected ventricular contraction; and

detecting from the highpass-filtered acceleration signal a peak that occurs after the R-wave and before the P-wave to obtain the MVC indication.

73. The method of claim **70**, including:

lowpass filtering the highpass-filtered acceleration signal to obtain a bandpass filtered acceleration signal;

detecting in the subject an R-wave associated with a ventricular contraction;

detecting in the subject a P-wave associated with an atrial contraction occurring after the detected ventricular contraction; and

detecting from a signal based on the bandpass filtered acceleration signal at least one of a positive or negative peak that occurs after the R-wave and before the P-wave to obtain the MVC indication.

74. The method of claim **57**, in which the detecting the AE indication includes comparing a portion of an acceleration-based signal to a model signal obtained from the subject.

75. The method of claim **74**, in which the comparing is performed autoregressively.

76. The method of claim **75**, in which the comparing is confined to a predetermined time window referenced at least in part to an intrinsic heart signal obtained from the subject.

77. The method of claim **57**, in which detecting the AE indication includes at least one of:

detecting an aortic pressure at end-diastole;

detecting an acceleration associated with aortic flow onset at the aortic pressure end-diastole; and

detecting at least one of a plethysmographic indication and a tonometric indication associated with aortic flow onset at the aortic pressure diastole.

78. The method of claim **77**, in which the detecting the plethysmographic indication uses at least one of a carotid location and a finger location.

79. The method of claim **57**, in which the computing an wellness indication of the subject based on the measured time interval includes computing a contractility indication of the subject based on the measured time interval.